

WHAT IS CLAIMED IS:

1. A differential cage for a differential gear, comprising a cage member (215, 315) with a cavity (245, 345) which is machined on the inside and has an installation opening (221, 244, 321) for compensating gears and driving gears, and further comprising an axle drive gear (203, 303) which is connected integrally with the cage member (215, 315), the cage member (215, 315) having two bores (221, 223, 321, 323) to support an axle driving shaft each, one (221, 321) of the bores, having a greater diameter than the other one, being dimensioned so as to be great enough for the introduction of a machining tool into the cavity (245, 345), characterized in that a bearing sleeve (41) for support of the associated axle driving shaft is threaded into and press fitted in the bore (139) which has the greater diameter.
2. The differential cage as claimed in claim 1, characterized in that the bearing sleeve (231, 331) comprises an external thread (228, 328) which is screwed into an internal thread (227, 327) in the bore (221, 321) of greater diameter and, next to the external thread, an outer surface which is press fitted to a corresponding inner surface of the bore (221, 321) of greater diameter.
3. The differential cage as claimed in claim 2, characterized in that the internal thread has a somewhat smaller diameter than the inner surface.
4. The differential cage as claimed in any one of claims 1 to 3, characterized in that the inside surface of the cavity (245, 345) is formed with a groove (251, 351) serving as a lubricant reservoir and especially being disposed in a radial plane of the differential cage (201, 301) which plane

preferably includes Z-axes of bores (253, 359) of a bearing pin for the compensating gears.

5. The differential cage as claimed in any one of claims 1 to 4, characterized in that the bore (221, 321) of greater diameter is dimensioned so that it forms the installation opening for the compensating gears and driving gears, the cage member (215, 315) and the bearing sleeve (231, 331) forming a closed, especially a fluid-tight cavity (245, 345) once bearing pins for compensating gears and the axle driving shafts are installed.

6. The differential cage as claimed in any one of claims 1 to 5, characterized in that the teeth (205, 305) of the axle drive gear (203, 205) are induction hardened, especially by means of a dual frequency induction process.

7. A method of making a differential cage, especially one designed in accordance with any one of claims 1 to 6, comprising a cage member (215, 315) the cavity (245, 345) of which is machined on the inside through a sufficiently great installation opening (221, 321) for the introduction, accommodation, and support of compensating gears and driving gears, the cage member (215, 315) and an axle drive gear (203, 303) being forged from one part, characterized in that a bearing sleeve (231, 331) is threaded into and press fitted in the axial bore (221, 321), especially shrunk into the axial bore.

8. The method as claimed in claim 7, characterized in that the axial bore (221, 321) is widened by heating, subsequently the bearing sleeve (231, 331) is threaded into the axial bore (221, 321), and the bearing sleeve (231, 331) is shrunk in the axial bore (221, 321) by cooling, whereby a press fit is obtained.

9. The method as claimed in claim 7 or 8, characterized in that the teeth (205, 305) of the axle drive gear (203, 303)

are induction hardened, especially by a dual frequency induction process.

10. The method as claimed in claim 9, characterized in that the teeth (205, 305) are subjected to a high frequency and a medium frequency, especially at the same time.

11. The method as claimed in claim 10, characterized in that a frequency mix of high frequency and medium frequency is adjusted such that the layers near the surface will be heated equally from the root of the tooth to the tip of the tooth.

12. A differential cage, especially as claimed in any one of claims 1 to 6, for a differential gear, comprising a cage member (15) with a cavity (31) which is machined on the inside and has an installation opening (33) for compensating gears and driving gears, and further comprising an axle drive gear (3) and a parking lock gear (11) which forms a one-piece forging together with the cage member (15) and the axle drive gear (3).

13. The differential cage as claimed in claim 12, characterized in that the parking lock gear (11) is disposed at the side (3a) of the axle drive gear (3) facing the cage member (15) and adjacent the same, the cage member (15) preferably being formed with lateral installation openings (33), part (35) of which extends into the parking lock gear (11), for introducing compensating gears and driving gears into the cavity (31).

14. The differential cage as claimed in claim 12 or 13, characterized in that the differential cage (15) includes aligned bores (13) having a common axis (A) to accommodate a bearing pin for the compensating gears, the spacing (a) of the axis (A) from the axle drive gear (3) being harmonized with the desired size of a lateral installation opening (33).

15. The differential cage as claimed in any one of claims 12 to 14, characterized in that one (39) of the two bores for support of the axle driving shafts in the cage member (15) has a diameter which is great enough for a machining tool to be entered into the cavity (31), and that a separate bearing sleeve (41) for the associated axle driving shaft is received in the bore (39).

16. The differential cage as claimed in any one of claims 12 to 15, characterized in that the teeth of the axle drive gear (3) are induction hardened.

17. The differential cage as claimed in any one of claims 12 to 16, characterized in that the teeth of the parking lock gear (11) are induction hardened.

18. A method of making a differential cage (1) designed especially in accordance with any one of claims 1 to 6, for a differential gear comprising a cage member (15), the cavity (31) of which, formed with openings (33, 39) for the introduction, accommodation, and support of compensating gears and driving gears, is machined on the inside, wherein the cage member (15) and an axle drive gear (3) and a parking lock gear (11) are forged from a single part.

19. The method as claimed in claim 18, characterized in that the diameter of one (39) of the two bores for support of the axle driving shafts is made greater than the other one, and that the inside surface of the cavity (31) is machined through the greater bore (39), especially a separate bearing sleeve (41) for support of the axle driving shaft being inserted, preferably pressed into the greater bore (39).

20. The method as claimed in claim 18 or 19, characterized in that the teeth of the axle drive shaft (3) and/or the teeth of the parking lock gear (11) are induction hardened, preferably in a dual frequency induction process, especially the respective teeth being subjected to a high frequency and a

medium frequency, especially simultaneously, in a dual frequency induction process, the frequency mix of high frequency and medium frequency preferably being adjusted so that the layers near the surface are heated equally from the root of the tooth to the tip of the tooth.